The Johns Hopkins Hospital Bulletin.

Volume I.—No. 5.] BALTIMORE, MAY, 1890. [Price, 15 Cents.

ON THE AMŒBA COLI IN DYSENTERY AND IN DYSENTERIC LIVER ABSCESS.

By WILLIAM OSLER, M. D., *Professor of Medicine, Johns Hopkins University.*

The first observation on rhizopods, as human parasites, was made by Lamb in the year 1859,[1] who found in the mucus of the bowel in a child dead of enteritis, amoeboid bodies and other rhizopods belonging to the *difflugia* and *arcella* types. Leukart doubts whether these forms could be definitely regarded as parasitic. The first satisfactory studies on the subject were made by Losch,[2] of St. Petersburgh, who found the parasites in the stools in a case of ulcerative inflammation of the colon. They were in extraordinary numbers and presented all the characters of amœbæ. The movements were extremely active and the elaborate description which he gives, might have been written from a study of the specimens in which we have here been interested. He injected the stools containing amœbæ into the rectum of three dogs, in one of which, at the end of eighteen days, the amœbæ were found in large numbers in the mucus of the bowel and at the basis of a small ulcer which had formed.

Kartulis,[3] stimulated by the observations of Koch, who found, during his cholera investigations in Egypt in 1883, amœbæ in sections of the intestines of persons dead of dysentery, examined 150 cases in a period of two years and in every one found these organisms in the stools. In twelve post-mortems the amœbæ were present in the ulcers in every case.

They were present in all stages of the disease, in both acute and chronic cases.

He has extended his studies on this question to the liver abscesses, which occur so often in connection with dysentery.[4] In an examination of twenty liver abscesses he found the amœbæ in sections of the walls in every case. In one instance he found a living amœba in the pus of the abscess, examined fresh after death. They presented the same characters as the parasites which he had found in the large intestines. In Virchow's Archiv, Bd. 108, he gives a fuller account of his observations. He has met with the parasites in more than 500 cases of dysentery, and in all the cases of liver abscess due to this disease which he has examined. In thirteen of twenty-two instances of these abscesses cultures were made, eight of which were negative; in three there were *staphylococci*, in one the *bacillus fœtidus* and in one the *proteus vulgaris*. He holds that the amœbæ, which exist in all the layers of the intestines in dysenteric ulceration, pass with the micro-örganisms and detritus through the portal veins to the liver. The micrococci excite the suppuration, but only in consequence of the lesions induced by the amœbæ. The pus seems to die rapidly in the abscesses, but the amœbæ remained alive for a much longer period, often over two months. Histologically, Kartulis describes three zones in the abscess wall,—first, the detritus zone, containing fibrous granulations and amœbæ; second, the cell zone, consisting of young cells which stain deeply and between which can be seen portions of liver tissue, liver cells and capillaries, and third, the limitation zone, separating the disease from the intact liver tissues. His most recent communication is in the Centralblatt für Bakteriologie, No. 2, 1890, in which he reports two cases of dysentery which had originated in Athens, in both of which amœbæ were present in the stools, similar in character to those met with in the Egyptian dysentery.

Massiutin[5] has studied this question under Losch's supervision. He has found the parasites in five patients—one, a case of chronic dysentery of seven years standing; the second, a man with chronic intestinal catarrh; a third, a case of typhoid fever with late diarrhœa and much mucus in the stools; the fourth and fifth were cases of diarrhœa with fluid mucoid stools. The amœbæ presented active movements and seemed to have the same characters as those described by Kartulis. He doubts their connection with the intestinal condition. He thinks that they gain access to the intestine through the water and find in the mucus of the colon situations suitable for their growth.

[1] Quoted by Leukart, Parasiten, zwte Auflage, Lief, I, p. 233.
[2] Virchow's Archiv, Bd. 65.
[3] Virchow's Archiv, Bd. 105.
[4] Centralblatt für Bakteriologie und Parasitenkunde, 1887, p. 745.
[5] Abstract in Centralblatt für Bakteriologie, Bd. 6, p. 451.

Baumgarten[6] comments as follows upon the view of Kartulis that the amœbæ constitute the exciting agents in the disease. "We will not contradict this view, although, as many old and recent observations show, very similar amœboid forms occur in other intestinal affections and even in normal fæces. We regard it, however, as unlikely that the amœbæ could induce all of the conditions in the dysenteric processes. Dysentery consists anatomically in a combination of diphtheritic and purulent inflammation, which induces rapid and deep ulceration of the affected part. We have no analogy to show that amœboid parasites can induce ulceration and we rather believe that the pyogenic micro-organisms, well known as exciters of ulcerative processes, are concerned with the amœbæ in the causation of tropical dysentery."

This practically embraces the entire literature of the subject. I had, after the publication of Kartulis' paper, made several examinations in Philadelphia with negative results. During a visit to the Hospital, Dr. Lutze,[7] last October, stimulated our interest in the matter as he stated that he had frequently met with the parasites in tropical dysentery. We have since had opportunities of examining several instances of the local dysenteric attacks, and in one case we thought we had found the parasites but we were not very confident. Recently, however, a case has been under observation in which the amœbæ have been found, not only in the stools, but in enormous numbers in the pus of abscesses of the liver. The details of the case are as follows:

Dr. B., age 29, resident in Panama for nearly six years, where he had had several severe attacks of dysentery, or indeed, more correctly speaking, a chronic dysentery, came north in May, 1889, and after remaining for a short time at his home in Baltimore, went to Germany. He had intervals of freedom from the diarrhœa but in Vienna it recurred severely. He returned to this country in December, and shortly afterward began to have an irregular fever with occasional chilly sensations and sweats, to lose flesh and to have a very sallow complexion. These symptoms persisted through January, and about February 15th I saw him in consultation with Dr. Friedenwald. His general condition was very good, considering that he had had severe dysentery and an irregular fever for more than two months. The liver was slightly enlarged anteriorly but not specially sensitive. Posteriorly, there seemed to be a very distinct extension of the dulness upward. He had six or eight mucoid stools with traces of blood daily. I saw him subsequently on four occasions and the symptoms remained practically the same. The temperature rose each day to about 103°. There were no positive chills but occasionally toward the afternoon he complained of sensations of cold. The diarrhœa lessened and his appetite improved, but in spite of this he had lost flesh and strength. Anteriorly, the liver dulness was not much increased, but behind it extended nearly a hand's breadth above the normal limit. There was distinct sensitiveness on deep pressure below the edge of the right costal cartilages, and he complained of a dragging pain whenever he turned upon his left side. The suspicion entertained at first that he had abscess of the liver was gradually confirmed, and on March 22nd Dr. Tiffany aspirated, and then incised and drained two large abscess cavities in the right lobe of the liver. The pus was thick, of creamy consistence, in color, in places slightly bile-stained, but it had not the reddish-brown and anchovy-sauce-like appearance presented by the pus in many cases of hepatic abscesses.

I made an examination of the pus at the Biological Laboratory, within three-quarters of an hour of its withdrawal and found in it, in large numbers, the amœbæ which Kartulis had described. The material was taken at once to the Pathological Laboratory where Prof. Welch and Dr. Councilman confirmed the observation. On each succeeding day, at the time of dressing, pus was removed from the drainage tube before irrigation was begun. On the first two days the amœbæ were quite numerous and very active. For the three following days they were still found, but moving forms were not so common, probably owing to the fact that stronger solutions of bichloride were used for irrigation. Subsequently they were very numerous, and we found them each day, in the pus as it came from the drainage tube, until his death on April 5th.

After the operation the dysenteric symptoms did not abate in the slightest; he continued to have from eight to sixteen movements daily. They varied a good deal in character, some were entirely mucoid streaked here and there with pus and presenting a few grayish shreds. Some were made up of a greenish, pultaceous mass, in which, on several occasions, there were large irregular sloughs. These mucous stools were usually slight in amount. Occasionally there was a large brownish liquid evacuation, in which could be seen small grayish-white masses embedded in blood-stained mucus. On each day there were found in these stools many characteristic examples of the amœbæ. They were most abundant in the small grayish-white shred masses, which in some places seemed almost infiltrated with them.

Description of the amœbæ.

(*a*) From the liver. The size ranged from 10 μ. to 20 μ., which appears to be somewhat greater than indicated by Kartulis. When at rest the outline was usually circular, occasionally ovoid, but when in motion they presented, as shown in the figures, the extreme irregular contour of moving amœboid bodies. The protoplasm could be distinctly differentiated into a translucent homogeneous ectosarc or motile portion and granular endosarc containing the nucleus, vacuoles and granules. The hyaline ectosarc was, as a rule, very distinct and in many examples the granular protoplasm of the interior was surrounded by it as a distinct rim. Occasionally a form was seen in which this portion was much less developed and the greater part of the organism seemed composed of granular substance. Within the endosarc, the vacuoles constituted the most striking feature. Sometimes the interior substance appeared to be made up of a series of closely set, clear vesicles of pretty uniform size. As a rule one or two larger vacuoles were present, the edges of which were not infrequently surrounded by fine dark granules. I never saw a true contractile vesicle which displayed rythmical pulsations but the larger vacuoles underwent at times changes in size. The nucleus was plain enough in some examples, in others very difficult or impossible to detect. It was usually pale, ovoid or rounded in outline and with a very delicate contour. No distinct nucleolus was seen, though there were sometimes coarser granules which possibly represented it.

When once recognized, there was not the slightest difficulty in distinguishing these bodies, even when at rest, from the pus elements, not only by their size but by the entirely different appearance of the protoplasm. The movements, however, constitute their most interesting and distinctive feature. From any portion of the surface, a rounded hemispherical knob would project and with a somewhat rapid movement, the process extended and the granules in the interior streamed towards it. As in the pond amœbæ, the clear ectosarc seemed to initiate and play the important part in the movements. Though sometimes slow, many examples were found in which the alterations in contour and the change in locality were quite as striking as in the large active forms of pond amœbæ. The processes were always rounded, never angular or linear as in the white blood corpuscles. Motile forms were found each day in the pus during his life. They seemed at times more active apparently than at others, and the movements went on at the average laboratory temperature, but seemed increased by heat. They continued active for hours at a time. Twice the movements were observed to continue in the same organism for more than ten hours.

(*b*) The amœbæ from the stools. During the month or more in which the patient was under observation, the diarrhœa was a marked feature. Tenesmus was rarely present and the frequency of the stools was from four to twelve in the twenty-four hours. The character varied very much. Sometimes he had a large brownish fluid evacuation with little or no mucus; more frequently three or four ounces were passed at a time and scattered through the brownish liquid mucus, blood and small whitish sloughs could be seen. On several occasions, the stools seemed to be made up of a gelatinous mucus, streaked with blood, and twice large grayish sloughs were found. Experience showed that the amœbæ were rarely found in the brownish liquid stools. In the mucus they were more frequent, but they were met with in large numbers only in the small grayish fragments, portions, no doubt, of sloughs which were present in variable numbers in almost every mucoid stool.

The general character of the amœbæ corresponded in every particular with those found in the liver. A greater variation, perhaps, in size was noticed, but in the appearance of the protoplasm, the character of the movements, and the arrangement of the vacuoles, no essential difference was noted.

It is impossible to speak as yet with any certainty as to the relation of these organisms to the disease. The subject is deserving of extended study, and a point of special interest will be the determination of their presence in the endemic dysentery of this country.

[6] Lehrbuch der pathologischen Mykologie, Bd. 2, p. 937, 1890.

[7] Now the government medical officer for the study of leprosy in the Sandwich Islands.

THE RELATION BETWEEN WATER SUPPLY AND EPIDEMICS.

By A. C. ABBOTT, M. D., *Assistant in Bacteriology and Hygiene, Johns Hopkins Hospital.*

(READ BEFORE THE JOHNS HOPKINS HOSPITAL MEDICAL SOCIETY, APRIL 7TH, 1890.)

There is no task within the scope of sanitary work which is beset with more difficulties than the tracing of an epidemic to its exact source. Recent experience in this field has induced me to make some remarks upon the subject, and in beginning perhaps it will be well to refer to the prevailing views upon the subject.

For diseases of the class represented by typhoid fever and cholera, two theories stand prominent, namely: the ground-water hypothesis of von Pettenkofer and the drinking-water theory of the school of bacteriologists, of which Koch is the chief exponent. In beginning the study of an epidemic, therefore, the conditions are viewed from one or the other of these standpoints, depending upon the school of which the investigator may be a disciple. If the ground water hypothesis is assumed to be correct, necessarily the existing conditions of the soil, the drainage, sewerage, etc., receive the first consideration, for in working up the subject upon this line an acquaintance with the fluctuations in the level of the water in the soil is of fundamental importance.

Pettenkofer, to whom we are indebted for this theory of epidemics, holds that epidemic diseases of the class mentioned are propagated by alterations in the soil, which changes receive their greatest impulse from fluctuations in the level of the sub-soil water. His theory is based upon observations extending over a period of thirty-six years, and the result of his investigations shows a remarkable coincidence between the rise and fall in the level of the ground-water and the increase and diminution of the number of cases of the disease. He found, for the whole of this period of time, that when the level of the ground-water was highest, the number of cases of typhoid fever or cholera was lowest, when the ground water level sank, an increase in the amount of sickness from these diseases occurred *pari passu*. From these observations he formulated his well-known law. He does not deny the existence of a materies morbi for these diseases, neither does he recognize one, but prefers to refer to it as "*X*, the hypothetical quantity." This *X* he thinks incapable of producing the epidemic, *Z*, until it meets the alterations in the soil, *Y*. The latter, as he believes, results from fluctuations in the level of the soil-water.

For the cities of Munich and Danzig, and a few other places, there seems to be no doubt that some connection, indistinct though it be, must exist between the two conditions. Unfortunately, however, for this theory, the condition is not constant for all localities, and indeed, in some places, the relations seem to be reversed. The theory of von Pettenkofer, though meeting with comparatively limited support, has been instrumental in teaching us much with which we were hitherto unacquainted and has stimulated the study of phenomena in the soil which has resulted in most profitable information. For this, as for many of the good things in sanitary science, except those concerning the bacteriological side, we owe him a debt of gratitude.

In contradistinction to von Pettenkofer, the adherents to the drinking-water theory hold that these epidemics result from pollution of the water-supply and are the outcome of direct infection through the use of such water. The finding of the typhoid fever organism in suspected water is, of course, the most positive argument in favor of this hypothesis, and there is no doubt that it has been found in certain cases. The difficulty of identifying this organism is so great, however, that there exists a reasonable doubt as to the accuracy of some of the reports published. There are other conditions pointing to polluted drinking-water which are almost as valuable as bacteriological evidence. Repeatedly we have such cases brought to our notice. There are instances of detection of the source of contamination of waters which may be considered classical in their perfection, and this, too, without bacteriological evidence.

One of many such examples recently occurred in the city of Berlin. The water supply of the city comes from two sources—the river Spree and the lake Tegel. The Spree flows through the city dividing it into two almost equal parts. In its passage, and even before it reaches the city, it hardly possesses the appearance of a sanitary water or one that should be supplied to a city for drinking purposes. The lake of Tegel, situated a few miles west of the city, furnishes a very good quality of water. The Spree supplies the northeast, east and southeast portions of the city almost entirely, and at alternate periods the central section. The remaining districts are supplied principally from the lake water except, as stated, the centre of the city, which receives at one time the river water, at another the lake water, and when both supplies are in operation, a mixture of both waters. The chemical and bacteriological conditions of these waters differ very materially. By the percentage of chlorides alone one may unhesitatingly say from which supply the sample had been taken—the Spree water being rich in chlorides whereas the lake water is comparatively poor.

Bacteriologically the water of the river is very bad, giving at times as many as 100,000 organisms per cubic centimetre, while that from the lake of Tegel may be said to come within the limits of good water. Before being turned into the city mains the water from the Spree is filtered through the large sand filter-basins, eight in number, at the Stralauer water works, and when the filters are functioning properly there is a great improvement in both the biological and chemical constitution of the water. Unfortunately, however, the filters are liable to get out of order, and in that case the result may be disastrous, as will be seen in this instance.

During the months of January, February and March, 1889, five of these eight filters which were uncovered, were rendered useless by freezing, so that all the water hitherto passing through eight must now pass through the three filters which remained intact. In consequence of this increased velocity and pressure the filters became broken and bacteria of all kinds, in large numbers, were swept into the mains and on into the houses supplied by this service. During the three months mentioned there were reported at the Berlin health office 700 fatal cases of typhoid fever, which occurred almost wholly in those parts of the city receiving the imperfectly filtered Spree water. A small percentage was in the sections receiving alternately the Tegel and Spree waters, whereas in those districts to which Tegel water alone was furnished there were no cases. During this period accurate observation upon the level of the ground-water were being made and the results showed that fluctuations in the ground-water were not an active element in producing the epidemic, because in the part of the city not affected by the disease the level of the ground-water was lowest, where, if Pettenkofer's theory is correct, typhoid should have been prevalent. This represents but one of many such examples in favor of infection through water supply and against the ground-water hypothesis.

With such evidence it is difficult to doubt the part the water supply may play in spreading these epidemics under unfavorable conditions. It impresses, too, the precautions to be observed in selecting the source from which a water supply should be obtained, for, as we know, there are as yet no artificial processes entirely satisfactory for the sanitary purification of polluted water, and we are only deceiving ourselves to rely upon them.

Through the courtesy of Dr. George H. Hocking, of Mount Savage, Maryland, I have recently learned the particulars of an epidemic of typhoid fever occurring in a small hamlet located within the field of his professional duties. In a certain number of families, all using the same drinking water (a spring or several communicating springs), there have occurred eighteen cases of typhoid fever during the past two months. A sample of the water was sent me for analysis. Chemically it came quite within the bounds of what might be termed a good water, but biologically the results were not so favorable. About 25,000 bacteria to the cubic centimetre were found and of that there were present about 200 to the cc. of an organism so like the typhoid fever bacillus of Eberth that it could only be said after a prolonged series of experiments that they were not identical with this organism.

The finding of the typhoid bacillus in suspected water is of course the crucial test, but an inability to find it is no reason for a favorable opinion, provided other circumstances point to pollution, and in such cases the users of the water should have the benefit of the doubt. The identification of the typhoid bacillus is perhaps one of the most difficult tasks of the bacteriologist, for the organism possesses but little which may be considered characteristic; it has no properties which are not possessed by a few other lower

organisms. Its growth upon sterilized potato, which is commonly given as unique, is found to be simulated by many other bacilli, and in fact the typhoid organism itself differs with the kind and quality of potato used.

Granting, and I think upon justifiable grounds, for the weight of evidence certainly points that way, that typhoid fever and cholera may be transmitted by the water supply, the question arises—what is the remedy?

In the case of large cities, as in the instance just related in Berlin, the question is a serious one, for the only answer which could be given is to dispense with the supply drawn from a polluted source.

Where water for household purposes is drawn from pumps, wells or springs, as is commonly the case in country towns, the source may be quarantined without very much inconvenience, and in most cases a quarantine of several weeks may be sufficient for its spontaneous purification, for, as has been shown experimentally, in the struggle for existence the typhoid fever organisms rapidly succumb to the activity of many saprophytic forms commonly present in water.

Where something must be done Pfuhl has recently shown that one of the most effectual and least dangerous disinfectants we possess for such work is ordinary milk of lime. He recommends the addition of the mixture to the mass to be disinfected until the whole reacts distinctly alkaline. This may be repeated about every two days for a week or so, when the water should be free from dangerous organisms.

Whether or not fluctuations in the level of the ground-water are potent in starting an epidemic or in rendering the condition of the soil favorable for the germination of the hypothetical materies morbi *X*, an elimination of this fluctuation, if statistical evidence is of any value, is seen to result in a decided diminution in death rate—in other words, in localities properly drained, where the rise and fall of soil-water is reduced to practically nothing, and where the condition of the soil remains nearly constant, disease is less frequent.

In tracing, therefore, an epidemic to its source it seems advisable to adhere strictly to neither of these hypotheses, but rather to look after the condition of both, for it is well known that neither of the conditions alone is sufficient to insure the health of a community. The good effect of a sanitary water-supply may be quite overbalanced by bad drainage and vice-versa.

To summarize then what has been said:—

The theory of von Pettenkofer does not hold for all epidemics, or for all places;—The weight of evidence is in favor of the drinking-water hypothesis;—Neither a good water-supply nor good drainage are sufficient, when existing alone, to insure the healthfulness of a locality—both should be good or the results may prove disastrous. Waters suspected of being polluted with typhoid or cholera dejections should be quarantined. Their purification may occur spontaneously or may be assisted artificially. The finding of specific germs in water is the crucial test but may be supplanted by circumstantial evidence almost as valuable. In the selection of a source from which to draw water for domestic purposes pains should be taken to determine the mean number of bacteria present, and some study should be made of their nature. No artificial means as yet employed are sufficient to render a polluted water absolutely free from danger.

BACTERIOLOGICAL STUDY OF HAIL.

The opportunities for the bacteriological study of the higher strata of the atmosphere are so rare that the data upon the subject are necessarily limited.

Inspection of the rain does not give us the condition of the higher levels only, but reveals along with the organism mechanically taken up at the elevation of condensation, others which may adhere to the drop in its passage through the lower strata to reach the earth. As the rain drop is fluid it is therefore impossible to say which of the organisms, providing several be present, were derived from the higher and which from the lower altitudes.

The hailstone presents rather more favorable conditions, because here we have a solid body, the nucleus being formed at the altitude of condensation and freezing, and remaining unchanged until it finally melts upon the earth's surface. Where the stones are of any appreciable size there is but little difficulty in determining which organisms contained in it were brought along from the altitude at which the nucleus was formed and which were taken up by the stone in its passage to the earth.

The storm which visited this city on Sunday, April 26th, 1890, presented unusual advantages in this respect. The stones were large, averaging the size of a walnut. The rain fell in torrents so that the air was well washed of suspended matters, and by proper precautions in the collection of the stones one can say positively as to the flora of the air at the point at which the stones were formed.

The method of analysis was as follows: A number of stones of about the size of an English walnut were collected and grouped into two series. Series 1 were simply picked up with the cleansed fingers and held under a stream of sterilized distilled water until they were reduced in size about $\frac{1}{4}$ by melting. They (five in number) were then placed in sterilized Petri dishes and melted. Plates were made from the water obtained by melting and gave, as a result of five plates, an average of 443 organisms to the cubic centimetre. In series 2 the stones were taken up in sterilized forceps and held under a stream of sterilized distilled water until they were melted to about $\frac{1}{4}$ their original size. The object here being to obtain only those organisms found around the nucleus of the stone. Plates made from the water obtained by melting these ice nuclei gave, as an average of four plates, 703 organisms to the cubic centimetre.

These figures indicate that between the nucleus of the stone and the surface there existed a zone in which but few organisms were present, and that the small numbers obtained from working with nearly the whole stone as compared with those found by using only a small central portion were the result of dilution by this melted zone.

These results correspond very closely with those recently published by Foutin,[1] who obtained from the hailstones of a storm which visited St. Petersburg July 23d, 1888, an average of 729 organisms to the cubic centimetre. The organisms found by Foutin comprised nine different varieties. Five of these nine were well known and four have not yet been identified.

The majority of the organisms found in our analyses were represented by a single species—the plates had the appearance in most cases of pure cultures. This organism was a short, thin, oval bacillus—peculiar in its appearance from its many vacuolations which give to it the effect seen in the spore-containing tubercle bacilli. It is actively motile. It does not liquify gelatine. On potato the growth is represented by a limited, moist, grayish-yellow patch, which is slightly elevated above the surface. The organisms in colonies on solid media are tenaciously adherent to one another so that an effort to take up a portion from a colony results in its drawing out into thin filaments. This organism has been isolated from our drinking water and belongs to the non-pathogenic variety.

Among the colonies not represented by this organism the well-known Fluorescent organism, found in the water, was present. There was also a large bacillus of about the size and appearance of B. Subtilis, and also a number of colonies of a short, oval bacillus somewhat similar in appearance to the one representing the majority of the colonies, but growing with a yellowish color. These latter, however, were not closely studied.

As to where these organisms come from it is rather difficult to say, any further than that in the cyclonic action of the winds upon which our local storm depended, clouds of dust must have been taken up into the outflowing currents and in this way it is not improbable that the dust and organisms had been transported from a point many miles distant. The centre of the main cycione was, as far as I can at present learn, located in the lake regions, though our local storm had its origin about ten miles northwest of this city. Whether the hailstones were formed at the point of origin of our local storm or they, too, like the dust, were transported over long distances it is impossible at present to say; so that any suggestions as to whence our organisms came are at present out of the question.

The interesting outcome of our analysis is the absence of a larger variety of organisms than one would *a priori* expect. The majority of the colonies found on the plates represented but one species, the short, oval bacillus described, neither moulds nor yeast cells of any description whatever could be found.

A. C. Abbott.

[1] "Bacteriologische Untersuchung von Hagel," von W. M. Foutin, *Cent. f. Bact. u. Parasitenkunde*, 1890, No. 12.

THE MORE REMOTE RESULTS OF REMOVING THE OVARIES AND TUBES.

BEING PART OF THE DISCUSSION BEFORE THE NEW YORK ACADEMY OF MEDICINE, SECTION ON OBSTETRICS AND DISEASES OF WOMEN, APRIL, 1890.

BY HOWARD A. KELLY, M. D., *Gynæcologist to the Johns Hopkins Hospital.*

The following is an analytical table of the results of those salpingo-oöphorectomies performed by me of which I have some exact recent knowledge.

The operations were performed in 1886, '87, '88 and '89.

They were distributed as follows:

14 cases in 1886, 21 cases in 1887, 25 cases in 1888, 36 cases in 1889—96 cases in all.

I have omitted all cases of which I have heard nothing later than six months after the operation. I have found, however, that where a case has continued to suffer after my operation, I have been very certain to hear of it, either directly from the patient or through friends or physicians. EIGHT CASES of *salpingo-oöphorectomy* for *fibroids* are symptomatically relieved of their pressure symptoms, and other disabilities for which the operation was performed. Of one case in 1887 I have had no news for a year past.

I know the exact condition of 25 CASES OF TUBO-OVARIAN ABSCESS [salpingitis et ovaritis suppurativa], commonly called "pyosalpinx cases."

One of these operated upon in 1886 required the removal of the other tube and ovary in 1888, having in the interval been in improved health; the second operation was followed by a slowly healing fecal fistula. She was in an improved condition when I last saw her.

Three cases had fecal fistulæ, all of which closed gradually.

One of these three had a urinary fistula from sticking the left ureter with a needle, which also closed.

I have no recent knowledge of two cases, both of which were improving when I last saw them.

Two cases got well, and then had uterine hemorrhages, after a year, and I found a mass at the cornu uteri, in one case, shown by an operation a week ago, to be a cyst of the broad ligament 1½ inches in diameter containing a ligature.

Two more cases had encysted masses closely connected with the uterus, one discharging pus through the scar, the other discharging her ligature through the vagina after incision.

Two cases have hernia.

Two cases continue to suffer from the same severe headaches which they had before the operation.

Outside of these cases I would write after the names of the others, recovered and cured.

I do not know of a single case "not improved." I am speaking strictly of the local condition and not of coincident ailments, which the patient had at the time of operation.

For the most part cases of this class were several months or a year in regaining health.

I know the condition of 33 CASES OF TUBES AND OVARIES EXHIBITING EVIDENCES OF SALPINGITIS AND OVARITIS,[1] in every case bound down by the adhesions of pelvic peritonitis.

Of 13 of these cases I can say that they are all well. 17 are improved.

One has been improved, but is a great sufferer with a frequent distressing desire to urinate.

Another died some months after operation from causes unknown to me.

Another operated on late last year is not improved.

Three were operated on twice.

My opinion regarding these cases is that the results are good enough to justify operation.

Out of TWENTY-FIVE CASES OF LESSER DISEASES OF THE OVARIES, such as small tumors, hæmatomata, etc., requiring removal along with the tubes, whose condition I know about, eight are well, seven very much improved, thirteen are improved, five slightly improved. Of two cases the note says "not much better." One case of hystero-epilepsy complains but little of her pelvic disorder and has no monthly exacerbations, but she is in other respects unchanged.

Another case operated upon last spring is no better.

Also one case operated on in the fall.

[1] These terms are used in the broadest clinical sense, and include many cases simply characterized by repeated attacks of pelvic peritonitis and the formation of adhesions between ovaries, tubes and surrounding parts.

With this statistical statement as a text in the foreground, I would urge the following points as important in connection with salpingo-oöphorectomy. In the first place as to the attitude in which we stand relative to this question—

There are two ways in which the question may be asked, differing more in the tone and manner of the asking than in the form.

The first is the simple query, followed by the categorical answer. The second is a question presented as an arraignment, which summons the questionée before the bar to clear his skirts of guilt.

There is a tendency to inquire into the remoter results of salpingo-oöphorectomy in this latter form, and I even saw it peeping out of the courteous letter of a friend inviting me to take part in the discussion, because it was "time to be honest in the matter," and "to speak the truth boldly."

I must positively refuse to discuss the question with the faintest taint of this spirit, for I am not aware that there has been any dishonesty among gynæcologists relative to this branch of abdominal surgery.

We must bear in mind that this is a new field, and the question asked is one requiring an accumulated experience and the lapse of time to answer.

We must also bear constantly in mind the condition of the patient previous to operation. In some cases it is a great *result* to save a life irrespective of lingering pains and aches. Who would blame the orthopedic surgeon who straightens a limb for not fully restoring its rotundity and power?

In some of our abdominal work it is the lives saved we must reckon and not the lives lost.

The only possible method of giving a satisfactory answer to the question "What are the results of salpingo-oöphorectomy?" is by statistics. Generalizations founded upon impressions and enthusiasm are here, as elsewhere, *worth nothing.*

I will summarize my statistical statement and anticipate my conclusion by the following declarations:

First, but a small percentage of women thus operated upon (salpingo-oöphorectomy) are restored to perfect health within a few weeks.

Secondly, a larger number only experience a certain percentage of improvement, the operation forming a necessary stepping-stone to comparative health.

Thirdly, a few cases are subjectively no better after the operation than before it, although seriously diseased structures may have been removed.

It is at once evident from this statement that I hold that *abdominal surgery stands upon the same plane as general surgery,* and that the *successful results are not often absolutely good, and are oftener relatively good results.*

A comparison with the amputation of general surgery may be very appropriately made. The amputation has in the past been sweepingly termed the "opprobrium of surgery."

In cases of compound fractures this opprobrium has been recently very unexpectedly removed by antiseptic surgery. In crushes and gangrenous limbs no procedure is more nobly conservative and beneficial than amputation. In withered distorted painful limbs is it purely a question of risk and suffering incurred, as balanced against the probability of relief and increased usefulness, which decides the surgeon whether to operate or to stay his hand?

So it is with these tubo-ovarian amputations—the gangrenous sloughing masses must come out at any risk.

The withered misshapen tubes and ovaries bound down to the pelvic floor only ought to come out if we can show good enough results.

The statement of the results implies the question, which it answers at the same time, "Is the gain worth the risk and the suffering?" I would urge that in a scientific consideration of the question we should from the outset *avoid the confusion of speaking of salpingo-oöphorectomy as if the operation were for but one disease.*

From a practical standpoint there are *two classes of cases* in which the operation is called for. They are the *necessary* and the *elective.*

Salpingo-oöphorectomy performed for fibroid tumors choking the pelvis and pressing on rectum and ureters, and for pyosalpinx, is an operation necessary to save life.

Salpingo-oöphorectomy performed for chronically inflamed ovaries and tubes, or for small ovarian cysts or blood cysts of the ovaries, is a purely elective operation.

The *results* of salpingo oöphorectomy should be divided into two classes connected by the bridge of time—first those results which at once follow in the train of the operation, and secondly those symptoms which persist or crop out after months or years—the *immediate* and the *remote* results.

In estimating the results we must never lose sight of the fact that the suffering which immediately follows an operation, even though the patient be completely cured by it, is to be weighed against the operation along with its mortality, the accidents of fecal fistulæ, injured ureters, fistulous drainage tracks, hernia, ileus and all pain from adhesions and other sequelæ. Among the remoter results are uterine *hemorrhages, hernia*, late discharge of the ligatures, and I might include here *persistence of pain* which it had been expected the operation would relieve.

Some of these evils can be readily obviated by closer attention to some details in the technique.

Hernia is an evil which will be much lessened by a more careful technique of the drainage tube, and more careful suturing, remembering that this form of hernia like ordinary ventral hernia, is a diastasis of the recti muscles, which must therefore be brought into careful apposition. Neither skin nor peritoneum must intrude between the lips of the wound, and when the drainage tube is pulled out its track in the abdominal wall must be closed by a provisional suture laid there at the operation, for this very purpose.

I have several times seen *severe hemorrhages* a year or two after operation. Here are two of the cases:

Both were tubo-ovarian abscesses operated upon in 1888. One had carried her disease for nineteen years, and the other was an extraordinary example of a fine woman sunk to the lowest depths of degradation. I discovered her in a lot of stale quilts and dirty bed-clothes in a closet in a common lodging house, and carried her up to the Kensington hospital in Philadelphia, and removed two densely adherent pus sacs. Her convalescence illustrates in a typical way the difficulties one may meet *after* salpingo-oöphorectomy. She had a bad cough when I operated, and developed a double pneumonia at once. After a slow convalescence she was for a long time in a home for consumptives. She finally recovered complete health, and I cannot adequately describe the physical and moral improvement of the woman. She was completely reformed. For a few months past, however, she has had periodical uterine hemorrhages. I discovered a mass about an inch and a half in diameter at the right cornu uteri, which I thought was my old ligature encapsulated. Last Saturday I performed an abdominal section, removing a serous cyst apparently within the folds of the broad ligament, and in it found the silk ligature of the pedicle. There was no trace of ovary or tube on either side. I quote this case not as a rarity but as an example of which I recall five instances.

The other patient has the same difficulty, but has not yet been operated upon.

Another very important point to be borne continually in mind is that in many cases the patient submits to the operation with one object in view, and the surgeon operates with another. The patient complains of *pain* and pain alone, and the doctor operates not for pain but to remove a tumor or an inflamed mass, taking his chances that the focus of the pain is in the mass and that its removal will put the pain out.

I would insist, therefore, that in many cases the standard of the patient relative to the operation is "how much relief from pain will I get out of it?"

The following note brought by the husband of a patient only last evening, is all I know about the woman writing it; and explains very well the standpoint from which the patient oftentimes approaches the operation. The letter is peculiarly characteristic of a class of pelvic sufferers, and you will notice how completely the patient confines her statements to her *sufferings*, making no reference to a possible tumor, inflammatory process or other disease, as a possible source of her suffering. You will at once appreciate from the tone of the letter how thoroughly dissatisfied this patient would be with any operation, whatever, removing the most remarkable tumor which does not relieve her of a large percentage, if not all of her pain. I have never seen a more typical note, and, therefore, quote it somewhat fully. It begins thus without address: "the seat of the pain is in the left side almost as high as the thigh-bone extending a little over toward the bowels. There is one point on the bowels which while not so sore on pressure, produces great pain after pressing. This pain is not generally present when I am lying still but if I walk over the house or through one or two rooms it appears at once and is a burning pain. There is pain through the ovarian region and womb, due to old long-seated trouble. There is a pain in the side extending into the back, which is ever present; this too is much easier when I am lying still. When anything in the bowel passes the tender place, it gives much extra suffering. The pain is easily borne when I am lying still, amounting at times to not more than the distressed feeling but any movement starts it again. For a few weeks past my suffering has increased in severity and my strength has failed to meet the attacks of pain. During the severe attacks there is often vomiting, although nothing that I eat gives me any distress."

But if I insist that in many cases the amount of relief gained from pain must be the criterion, I must also with apparent contradiction insist that the patient is not always the best judge of the result.

I have often seen patients grateful beyond measure for a very little done for them, even greatly magnifying the benefits of my work.

I have seen others who had been rescued from death and raised up from a bed of invalidism to be able to go about and be useful members of society. Yet they are always grumbling, and will remain grumblers to the end of their days, and if I did not have my past list of their complaints to compare with the present I would very much doubt if they had been in the least benefited.

If the actual danger of operations of a given class is slight I am willing for example to do my work to render my patients twenty to thirty per cent. better, and when I get eighty or ninety I am very grateful. It is altogether a debit and credit question, in which even a moderate balance each time in our favor in the end makes a sum total of a great amount of pain relieved and happiness added in the world.

To avoid some of the evil late results of salpingo-oöphorectomy I would also urge the following practical points:

The *ligature* often remains a focus of sepsis long after the pelvis has completely emptied itself of all débris. Avoid this by never drawing a ligature through the pedicle of a pyosalpinx so long as there is any pus in the pelvis or about the stump. The sepsis thus dragged into the interstices of the pedicle is a fruitful source of serious trouble.

Use a *drainage tube large enough to work rapidly*, plug it with gauze for continuous capillary drainage. Keep it aseptic and get rid of it soon, lest its track suppurate and pus in this way get into the ligatures.

Work deliberately and *carefully*, and do not unnecessarily handle the intestines.

Examine the specimen carefully before concluding the operation, to see that it is perfect and no pieces of tube or ovary are left behind.

In cases of sarcoma give the tumor a very wide berth. If you don't, your pedicle will propagate the disease. Do not consider the work at an end when the stitches are out, but watch the patient for some weeks or months. Avoid carefully excessive constipation.

Keep your cases longer in the hospitals; two and three weeks is too short a convalescence; they are liable to be seriously ill again after getting home.

NOTES ON NEW BOOKS.

A New Medical Dictionary, by GEORGE M. GOULD, B. A., M. D. (*Philadelphia, P. Blakiston, Son & Co.*, 1890.)

This excellent little book gives sufficient information for the wants of the medical student, as well as the general practitioner, and stands within the reach of all.

The tables, illustrating the principal characteristics of the more important bacilli are very convenient for the bacteriological student, those also of the muscles, nerves and arteries are quite useful, and are calculated to save a good deal of time in looking up their origin and distribution in larger anatomical works. The definitions, derivations and pronunciations of the various terms are in general good and correct, although at times some definitions are met with which are laconic and mysterious. A little more completeness and care in the definitions of terms, especially those used in physiology, would be quite desirable. The number of typographical errors is small, but '*processus e cerebelli ad testes*' is rather disturbing.

The tables given in the appendix of the mineral waters of the United States, and their composition, are of value. On the other hand, while it may be of interest to some to learn that the probability of a live-born child's dying of disease of the brain is 0.121859, and of smallpox 0.003521, etc., such data on the whole seem a little out of place, even in an appendix to a medical dictionary.

The print and paper in the work are good, as we are accustomed to see in all the books published by Blakiston & Co.

C. E. S.

PROCEEDINGS OF SOCIETIES.

THE JOHNS HOPKINS HOSPITAL MEDICAL SOCIETY.

Meeting of February 3d, 1890.

40 members present.

Epispadias—Intestinal Obstruction—Appendicitis.

Dr. HALSTED exhibited cases of epispadias, intestinal obstruction, relieved by an operation—also of appendicitis which had been cured by a prompt operation.

Dr. WELCH exhibited a specimen of appendicitis and demonstrated its mode of origin.

Pre-Ataxic Tabes Dorsalis with Retained Knee Jerk.—Dr. THOMAS.

B. T., aged 39, native of Germany, came to the neurological department complaining of a pressure around the body, cutting pains in legs, arms, bowels and breast.

Family history unimportant. Patient was a healthy youth and suffered from no diseases other than those of childhood. He had contracted gonorrhea and syphilis. He married four years ago and is the father of two healthy children. He noticed the first symptoms of present trouble at about the time of his marriage. They were severe, cutting pains in legs and at times pain in left eye and forehead. Shortly afterwards he discovered that he had some slight difficulty in walking in the dark. Two years ago he was troubled for about three weeks with double vision. Soon after this he had a sensation as if a rope were tied around his body midway between the ensiform process and the umbilicus. These symptoms have persisted with more or less severity ever since. At times the sense of constriction is so intense that it seems as if a rope were passed around his body and strongly pulled at both ends. He describes his pains as suddenly attacking one spot and becoming very intense, then flying to another place to leave it in like manner. These pains are more frequent and more severe when the weather is damp and cold. He has noticed no increase in his difficulty in walking. He does not complain of any trouble with vision; there have been no symptoms from the bladder or rectum; he has noticed lately a decrease in his sexual desire.

He has been treated with potassium iodide and hypodermic injections of corrosive sublimate, and has also been suspended about twenty-five times. He seems only to have derived transient benefit from his suspensions.

Condition January 11, 1890. Intelligence good; eyes movable in all directions; no nystagmus; pupils equal but somewhat contracted. They react on accommodation, but not very evidently to sensory irritation. They do not react to light. Vision is normal, and an opthalmoscopic examination reveals no abnormality of the fundus.

Facial muscles act well and equally on both sides. Tongue is protruded straight.

Hearing is below normal in both ears.

The movements of his arms are quite steady, but there may be a slight awkwardness in picking up small objects, such as pins. However he has no difficulty in fastening his clothes.

Muscular strength in arms is good, and sensation normal.

He stands steadily with eyes open and feet together, but sways slightly when eyes are closed. With eyes closed he is unable to balance himself on one foot.

There is nothing characteristic about his walk. He is able to walk backwards and can step on a chair without revealing any marked incoordination.

Muscular strength in legs is good. There is some impairment of sensation in legs, more especially on soles of feet and particularly in his perception of pain.

The knee-jerk is present on both sides, but is only produced on the left side with difficulty by reinforcements.

Plantar reflexes are present but are rather weak on right side. No cremasteric reflex can be observed.

Dr. Thomas said that this case is of interest from the fact that although the history and examination pointed very plainly to the diagnosis of locomotor ataxia, there is as yet very little disturbance of motion, and the knee-jerk can be produced in both legs.

In referring to the importance that the knee jerk has come to occupy in diagnosis, he gave a short sketch of the discovery of the phenomenon, and the different views held with regard to its explanation. He said that in locomotor ataxia the the absence of the knee-jerk has come to be considered as an almost constant sign. Cases, however, were reported in which it could be produced in either one leg or the other or in both. In explanation of this fact he referred to Prof. Westphal's[1] cases, in which he connects the disappearance of the knee-jerk with the involvement of a limited area in the cross-section of the spinal-cord (his Wurzeleintritzone).

Meeting of February 17th, 1890.

36 members present.

Acute Croupous Pneumonia.—Dr. WELCH.

Dr. WELCH exhibited cultures from cases of acute croupous pneumonia and described them at length.

Lupus Vulgaris.—Dr. MORISON.

DR. MORISON exhibited a case of *lupus vulgaris.*

Athetosis and Spastic Diplegia.—Dr. OSLER.

Dr. OSLER exhibited cases of athetosis and of spastic diplegia and made remarks upon them.

Acute Bright's Disease in Cows.—Dr. COUNCILMAN.

Dr. Councilman exhibited the kidneys of a cow. The animal had been sick for several months and was greatly emaciated. A diagnosis of pulmonary tuberculosis was made by the veterinary physician who had seen her. The kidneys were enormously enlarged and covered with small white elevations. On microscopic examination a general diffuse nephritis was found with areas of acute inflammation corresponding to the white elevations. In these areas a short bacillus was found both in the gelatine cultures and in the sections.

Carcinoma of Vulva and Fibroid Uterus.—Dr. KELLY.

Dr. KELLY exhibited specimens of carcinoma of vulva and fibroid uterus.

Meeting of March 3d, 1890.

38 members present.

Amputation of Breast—Radical Cure of Hernia—Healing under Moist Blood Clot.—Dr. HALSTED.

Dr. HALSTED exhibited a case of amputation of the breast for cancer, two cases of radical cure of hernia and two cases illustrating healing under the moist blood clot.

Bilateral Dislocation of Jaw.—Dr. BROCKWAY.

Mary D., German, married, aet. 30. Admitted December 26, 1889.

About 13 months ago, during an attack of vomiting, patient had dislocated both condyles of lower jaw.

Being intellectually obtuse had never suffered much inconvenience.

A doctor had prescribed liniments.

On admission lips could be approximated and saliva retained, mastication, deglutition and speech very imperfect, took fluid diet solely. Lines of teeth were about $\frac{3}{4}$ in. apart and that of lower jaw projected about $\frac{1}{2}$ in. beyond that of upper. Scarcely any depression to be noted at sites of temporo-maxillary articulations, some fullness in temporal fossæ, chin depressed and prominent, lower jaw nearly immovable. Patient's condition and appearance were not distressing and she desired relief mainly to be able to take solid food.

Under ether in the Out Patient Department unsuccessful attempts at reduction were made.

Operation, December 28, 1889. Efforts by manipulation could only produce slight motion toward replacement of left condyle. A horizontal incision just below left zygoma was made and exposed the stretched untorn

[1] Berlin Klin. Wochenschr., 1881. Arch. of Psychiat, 1886, XVII, 547-576.

capsule of joint surrounding head of condyloid process. The glenoid fossa was filled with fibrous tissue which was allowed to remain. By means of a blunt instrument placed in the sigmoid notch, this condyle was forced back over the articular eminence and made a depression for itself in the newly formed tissues of old joint cavity, but did not tend to stay in place. Manipulation now failed to restore the right condyle and a similar cutting operation was done over this articulation.

Then with an instrument in either sigmoid notch, the jaw was reduced, the teeth could be approximated, but still protruded about ¼ in. due to the filling up of the glenoid fossae. This was considered good enough and dislocation did not tend to recur. Wounds were sutured with drainage and dressings, and jaw held in place with Plaster of Paris.

Patient was fed through a tube introduced at site of an extracted tooth.

On the following day position of teeth was much better than at time of operation, and at first dressing on 3d day was nearly perfect. On 7th day was allowed limited use of jaw for eating and talking, and on 10th day was discharged, cured. A month later was able to open mouth to normal extent. Position practically perfect. No facial paralysis. The muscles most stretched and hindering reduction seemed to be the temporals. One case of reduction, by manipulation, after 4 months, is reported.

The use of Fluorescein as a means of Diagnosing Lesions of the Cornea.—Dr. RANDOLPH.

(See page 43, No. 4 *Bulletin*.)

Mechano-Therapy in Sweden and Germany.—Dr. HARTWELL.

The term Mechano-therapy has a more evident meaning than Kinesitherapy which is sometimes used synonymously with movement treatment and is more convenient than Mechanico-therapy. Though used by some writers to denote massage simply, the weight of foreign usage sanctions a more comprehensive meaning and I shall use the term in this paper to denote medical gymnastics and massage.

It is well to recognize the fact that in a sense this branch of the healing art is not a modern invention. Its origin is most ancient. In one form or another its use has been common in all parts of the earth, not only as a form of folk medicine but also, at times, as an approved form of legitimate medical practice.

Modern gymnastics have reached their highest development in Sweden and Germany, where for many years they have played an important part in school and military training. Medical gymnastics have, however, received most attention in Sweden—thanks to the zeal and energy with which Peter Henry Ling, a Swede, labored during the first third of the present century to put gymnastics on a rational and scientific basis. Ling, who was born in 1776 and died in 1839, began his public career in 1805 as a teacher of gymnastics and fencing in the Swedish University of Lund. It is said that Ling's interest was first aroused while he was still a student in the University of Copenhagen, through his being cured of a rheumatic affection of his shoulder, by the practice of fencing. Ling strove to found his system upon the laws of anatomy and physiology, of which sciences he became an ardent student, though he never took a medical degree. He was unquestionably a man of genius, an indefatigable worker and an inspiring teacher. In 1813 he induced the Government to establish the Royal Central Gymnastic Institute in Stockholm, at the head of which Ling remained until his death. Under Ling and his successors the Central Institute became the foremost institution in the world, for the training of teachers of pedagogical and military gymnastics and of practitioners of medical gymnastics, a rank which it still holds. Ling and his followers succeeded in making medical gymnastics popular and profitable throughout Scandinavia, and in awakening a certain amount of interest in other countries, notably Germany and Russia. Many, perhaps most of the leading teachers and practitioners of Swedish gymnastics have been officers in the army, which is so peculiarly constituted that very many of its commissioned officers have no military duties to perform during a large part of the year. Not a few officers, therefore, engage in civil pursuits to eke out their salaries. To the adoption of gymnastic instruction as an integral part of the training of all school children and recruits and the fact that such instruction has been given or controlled by a corps of highly trained men, who in respect of breeding, cultivation and social position are superior to any class of gymnasts the world has known,—we may attribute the large measure of favor and interest which the Swedish public show in the use of medical gymnastics.

Ling divided gymnastic movements into four main classes, viz.: *Sjukgymnastik*, or movements adapted to counteract disease and correct deformities; *Friskgymnastik*, or gymnastics calculated to promote normal growth and maintain health; *Militargymnastik*, movements suited to rendering recruits in the army and navy strong, dexterous and enduring; and *Æstetiskgymnastik*, or movements for giving graceful expression to thought or emotion. He also taught that each movement of the trunk or limbs must exert a specific effect upon the inner organs; that the heart and blood vessels, the lungs, the generative organs and the nervous system were the organs chiefly so influenced; and that only such movements should be employed as could by experience be shown to have the effect desired. In no other system of gymnastics is so much care and thought given to selecting and grouping movements according to certain clearly defined principles or so much regard paid to the manner in which movements are executed.

The *Sjukgymnastik* comprises movements of three sorts, namely: active, passive and duplex. The first are voluntary movements, which may or may not involve the use of apparatus. Passive movements are movements of the patient's body, or some portion of it, made entirely by a manipulator, while in duplex movements both patient and manipulator take part. Resisted and assisted movements, of which one hears so much in massage literature, are duplex movements. Passive and duplex movements are the most characteristic of the *Sjukgymnastik* procedures. It is interesting to note that under the head of passive movements Ling described and, in a general way, taught the use of the manipulations which are now termed massage movements.

Within a few years the practice of medical gymnastics has been limited by law to those graduated from or approved by the Central Gymnastic Institute in Stockholm. Gymnasts already in practice for a certain number of years were exempted from this regulation. Henceforth the gymnasts are to be under the quasi control of medical practitioners. There are now three physicians on the teaching staff of the Central Institute, to whom is entrusted the strictly professional training of the Sjukgymnasts and the supervision of the clinics of the Institute. The full course for men at the Central Institute is three years; for women, who are excused from fencing and military gymnastics, two years.

Anatomy, physiology, a modicum of pathology and the principles and practice of movements are the chief studies. The teaching in anatomy and physiology is more thorough and comprehensive than that to which most American students are subjected. Some hundreds of school children receive their instruction in gymnastics from pupils of the Institute. In the winter of 1888–89 I found from 100 to 150 patients a day in the clinics of the Institute. The treatment consisted wholly of gymnastics and massage, which were given by the pupils of the last year under the guidance of their medical teachers.

These special forms of *Sjukgymnastik* have come into prominence in recent years. Lieut. Henrik Kellgren, now of London, has developed a special kind of treatment in which what he terms "nerve pressure" and "nerve strokings" play a dominant role.

Major Thure Brandt of Stockholm, like Kellgren, a graduate of the Central Institute, has for many years practised with striking success, in many instances, a peculiar combination of gymnastics and massage for the relief of uterine and other troubles peculiar to women. Brandt, though a layman, is generally admitted, even in Stockholm, to be a man of high character, unusual experience, a clever diagnostician, and a rarely expert manipulator; operations of a cutting kind he abhors. Brandt's patients are mostly sufferers from displacements of the uterus, prolapsus ani and chronic parametritis. His methods and results have excited much attention in Germany. Many prominent or rising German gynaecologists have studied with Brandt or experimented with his method. The university clinics of Jena, Greifswald, Prague and Vienna are the most important places where practical investigations of the Brandt method have been made. Brandt's book in French was issued in 1868. I believe, Norstrom, a Swedish physician, living in Paris, published a book in 1876. Most of the literature on this subject, which embraces nearly thirty titles, has appeared since the publication in 1886, of Profanter's "Die Massage in der Gynakologie." Schultze, Schanta, von Pruschen, Resch and Profanter are some of the more prominent names of those who have discussed Brandt and his methods. Brandt's own publications, whether in Swedish, French or German, are

characterized by an involved and not lucid style. Roth of London has published a translation of a portion of Brandt's original book. The fullest treatment of Brandt's method that has appeared in this country is, I believe, contained in a paper on Manual Treatment in Gynecology, by Dr. H. J. Boldt of New York, published in the American Journal of Obstetrics and Diseases of Women and Children, Vol. XXII, No. 6, 1889. Boldt studied with Brandt in Stockholm.

"By massage," says Klein, "is meant a mechanical treatment of the soft tissues for therapeutical purposes, by means of certain manual procedures, such as stroking, kneading, pinching and striking." Massage and gymnastics are frequently confounded, especially as many medical gymnasts claim that massage is only a part of gymnastics. So far as I have been able to learn, from observation and reading, the best massage technique is that which has been developed by Mezger and his pupils. This includes only four manipulations, viz.: 1, *Effleurage*, or stroking, made with varying degrees of force by the palm or radial side of the hand, and nearly always in a centripetal direction. 2, *Pétrissage*, or kneading, as when a muscle, or group of muscle, is raised from its ordinary position as fully as its attachments and fascia admit, and subjected to the transverse pressure of the hand or hands by which it is grasped. 3, *Massage a friction*, or Mezgerian friction, which consists of strong circular rubbing, superficial or deep, as the case may demand, with the finger tips of one hand alternating with strong, centripetal stroking, by the palm or radial side of the other hand. This form is of especial use in massage of the joints. 4, *Tapotement*, which comprises blows or strokes given by the flat hand, by the ulnar edge of the hand, the fist, the ends of the finger, etc. Some manipulators make use of various instruments, such as Klemm's muscle beaters and the like, but most employ only the hand. As a rule these manipulations are made in the direction of the return currents of blood and lymph, towards the heart. The best technique, according to my observation, is that taught by S. von Mosengeil, professor of surgery in the University of Bonn, which may be characterized as a form of the Mezgerian massage—Mosengeil being Mezger's most prominent pupil. Mosengeil's technique is superior to any I saw in use in Sweden, being characterized by a more careful regard to the position of the fasciæ, lymphatic vessels and glands, the direction of venous trunks, and the position of long prominences in the parts manipulated. It is methodically varied and regulated, moreover, according to the part of the body requiring manipulation. Of course every expert masseur follows certain methods of his own in minor matters. The technique of massage has not been so fully developed in this country as in Europe, where localized massage, *e. g.*, eye massage, neck, abdominal and pelvic massage, have received much more attention than with us. On the other hand, general massage, for tonic purposes, as introduced by Dr. Weir Mitchell, is more frequently employed in this country and England than on the Continent. As the number of physicians who make a specialty of giving massage is vastly greater on the other side of the Atlantic, one naturally finds more scientific and refined methods in vogue there than here. Those who desire a more detailed account of the technique of massage should consult the publications of Mosengeil, Reibmayr and Gerst in German; of Berghman and Helleday and Klein in Swedish, and of Mitchell, Douglass Graham, Dowse and Murrell in English. Murrell's book has been translated into French and a portion of Graham's useful work has recently appeared in Swedish. Klein affirms that, though massage and gymnastics have many points in common, and are frequently made use of simultaneously and by the same persons, in concrete cases the difference between the two methods of treatment is so evident that one can scarcely fail to apprehend it. "For example," he says: "We can massage an exudation or a hæmatoma because they are at least, in a certain sense, soft tissues, but one cannot gymnasticize them, since, not being organs of movements, they cannot, properly speaking, be exercised. A muscle, on the other hand, can both be exercised gymnastically and massaged. In the first instance, the muscle acts and is treated as an organ; in the second as a tissue. Neither the fact that massage, by removing an infiltration, heightens the functional power of a muscle, and so far forth has the same aim and effects as gymnastics, nor the fact that the use of gymnastics, simultaneously with massage, facilitates the removal of an infiltration from a muscle forbids, in the slightest degree, the sharp discrimination of the two methods of treatment. The only right way is to hold fast to the difference between massage and gymnastics, and so point out that the two are parts of mechano-therapy." Zabludowsky found that the muscular power and vital function of the person experimented on were increased by general massage. In the case of a frog muscle which had been exhausted by a maximal induction current, he found that massage of the muscle was much more efficacious than rest in bringing about a restoration of its contractility. Similar effects were observed in exhausted human muscle.

The experiment of Reibmayr of Vienna, on rabbits, showing the considerable and favorable effects of abdominal massage upon the resorptive power of the peritoneal cavity, should be mentioned in passing. In short we may say that massage has an important influence in restoring normal activity in the circulation, in increasing metabolism, in forestalling or diminishing localized hyperæmia and inflammation, and affords perhaps the best means of bringing about the resorption of pathological products which can, without injury to the tissues, be returned to the channels of the circulatory system.

On the other hand massage is contra-indicated in all parasitical and infectious diseases, in most diseases of the skin and in those diseases in which the products of inflammation are likely to have pernicious effects on the tissues. Of course massage is contra-indicated in the case of open wounds and an abraded skin. Massage, according to the best authorities, should be given upon the naked body, not through the clothing. Many use vaseline, lard, or some other ointment, but the dry hand is generally preferable. In regard to the application of massage it is desirable either that the physician should give it himself or strictly control its administration. In no class of cases do professional non-medical masseurs do so much damage or so little good as in joint affections.

Milk as a Culture Medium for the Tubercle Bacillus.—Dr. ABBOTT.

It has been repeatedly demonstrated by reliable authorities that the milk from tuberculous cattle may contain tubercle bacilli.

Bollinger, Bang, Zschokke and Ernst claim to have found the organism in the milk of cows in which no tuberculous lesions could be demonstrated in the udder.

Hirschberger gives as a result of his investigations that in 33 per cent. of cattle with pulmonary tuberculosis the bacillus of the disease was present in the milk.

In a recent series of experiments made at the Imperial Health Bureau at Berlin the tubercle bacillus was found to retain its vitality for a period of ten days in milk, thirty days in butter, fourteen days in cheese and fourteen days in whey.

With these facts in view the question arose—Do the organisms multiply in these media or do they simply lie dormant?

My experiments with milk demonstrate that the organism not only retains its vitality in milk, but may increase and multiply to an extent quite equal to that seen when other artificial media are employed.

In these investigations ordinary milk as it comes from the shops was employed. No attention was paid to its reaction. As the organism apparently grows best when exposed to oxygen it was, of course, necessary that some agent which would render the milk solid should be added. For this purpose agar agar, which of itself offers no nidus for the growth of the organism, was added to the milk in the proportion of 1 per cent. The whole was then sterilized and placed in tubes and allowed to solidify in the way commonly employed for blood-serum tubes. The tubes of solidified milk were then inoculated from a pure culture of the organism which had been growing on 6 per cent. glycerine agar agar and then placed at the temperature of the body (37.5° C.). After the usual time growth began and, as you can see in the tubes before you, is now progressing in as favorable a way as one ordinarily sees this organism.

The conclusion then from these experiments, in connection with the results of other observers referred to, is that the milk of these cattle not only may contain the tubercle bacillus but that the organism retains its vitality and may even increase and multiply in numbers, under favorable conditions. With few exceptions, in this country, the use of uncooked milk is the rule and there can hardly be any doubt that a certain amount of infection takes place in this way. The evidence in hand certainly contra-indicates the practice and suggests some remedial steps.

The sterilization of milk for domestic use is a simple matter and should be insisted upon. It may be accomplished in two ways—by boiling and by steaming—the latter is the preferable method as it causes less alteration in the milk. It may be accomplished as follows: place the milk to be used in a clean flask or in several flasks, depending upon the quantity needed, plug

the mouths of the bottles with raw cotton and steam in the ordinary steamer found in every kitchen for a period of not less than thirty minutes, the time to be reckoned from the beginning of boiling. By following the directions carefully the organism will be rendered inert, and a step in the prophylaxis of the disease will be accomplished. When one considers that ⅛ of all deaths are from tuberculosis it certainly seems incumbent upon us to take all measures in our reach to try and lessen this proportion.

As to the experiment presented, after a somewhat hasty review of the literature I am unable to find any report of a similar series of experiments with milk. Whey, whey-gelatine and whey-agar have all been employed, but so far as I can learn the employment of milk alone as a culture medium for the tubercle bacillus is unique.

Meeting of March 17th, 1890.

42 members present.

Ununited Fracture of Hip—Tuberculosis of Shoulder—Tuberculosis of Elbow—Paralytic Valgus—Skin-Grafting.—Dr. Halsted.

Dr. Halsted exhibited the following cases to illustrate the healing of wounds under the moist blood clot: An old dislocation of the hip where the head of the bone had been excised, a tuberculous shoulder and a tuberculosis elbow; also a case of paralytic valgus and of skin-grafting done by Thiersch's method.

Animal Parasites.—Dr. Welch.

Dr. Welch exhibited specimens and gave a detailed description of a large number of animal parasites.

Perforative Peritonitis.—Dr. Lafleur.

Dr. Lafleur exhibited a specimen illustrative of perforative peritonitis and gave a history of the case.

Meeting of April 7th, 1890.

26 members present.

Remarks on Mitchell's High-Tension Pulse.—Dr. Scott.

I wish to call the attention of the society to a curious phenomenon which occurs in conjunction with high arterial tension, which Dr. S. Weir Mitchell has recently reported.

The "Medical News" of January 18th, 1890, contains a report of Dr. Mitchell's clinic in which he showed 3 cases which exhibited this phenomenon in a marked degree—all being cases of extreme blood pressure.

In each of the 3 cases the arteries, and especially the temporals, were serpentine; the tension much plus. In each case albumen and casts, both hyaline and granular, were found in the urine; and in the tortuous temporals Dr. Mitchell noticed this fact, viz.: that if you compressed the artery sufficiently to obliterate the blood current there was still strong and vigorous pulsations in the artery beyond the point of pressure. He remarks that this must be due to the fact that, the intra-vascular pressure being so high, the anastomosing vessels above the point of compression are dilated, and convey the cardiac impulse to the ultimate branches of the temporal. He noted in but one case the impossibility to stop pulsation in the radial beyond the point of compression, but adds that since this one case he has seen two more.

Dr. Osler suggested that I should make notes on the cases which came under our notice in the ward and in the dispensary, and I have succeeded in collecting 17 cases, a summary of which will follow. I have made all the trials upon the radial—mainly on account of convenience. I may precede the list of cases with the statement that all the pulses of the residents and the dispensary men have been obliterated with comparative ease.

I have seen 17 cases in which the pulsation in the radial could not be obliterated: of these 6 were between 30 and 40 years of age, 3 between 40 and 50, 6 between 50 and 60, 2 between 60 and 70; 5 of them may be called cases of pure cardiac disease, 3 of aneurismal (thoracic), 8 of Bright's disease or arterial sclerosis, 1 of cirrhosis hepatis.

In 12 of the 17 cases the urine was examined, and in 9 was found to contain albumen and casts; in 3 cases the urine was normal; in the majority of the cases the aortic second sound was accentuated, and more or less ringing in character.

In these 17 cases, then, this pulsatile phenomenon was observed. Now Dr. Mitchell states that under strict milk diet, with heroic doses of the Tr. Fer. Chlor. the pulse tension comes down and then the pulse can easily be obliterated with pressure; this he considers a point of great prognostic value, always pointing to an improved condition; thus, in two cases at present in our medical ward you could not, on admission, obliterate the pulsation in the radial; under rest, milk diet—combined with iron—the pulse has become compressible, and is easily obliterated; *i. e.*, they are much improved. Another curious fact noted by Dr. Mitchell is this:—that in one of his cases the high tension was unilateral, first appearing in the right temporal and then leaving and reappearing in the left temporal. No explanation is offered for this. We have in the ward at present a patient in whom you cannot obliterate the right radial while you can the left with moderate ease. The case is one of large thoracic aneurism, the sac occupying a portion of the right chest.

The persistence of the extreme blood pressure—with inability to obliterate the artery—is then a bad symptom, several of the renal cases, in whom this sign persisted, have already been recorded in our post-mortem book.

In conclusion. I think we can make the following points: 1st, that this pulsatile phenomenon is present in many renal, cardio-renal, and endarterial cases; 2nd, that the disappearance of the pulsation is a favorable symptom; 3rd, the sign will be valuable if it differentiates between an atheromatous pipe-stem-like artery and that of extreme high tension, and this seems to be the case, for in several instances of extreme atheromatous radials obliteration of the pulse was easily accomplished; 4th, that the pulsation may be present in some people whose radial anastomoses are very free, for it was with some difficulty that obliteration was successful in two cases whose arteries were compressible but whose collateral circulation seemed unusually good.

Water Supply and Epidemics.—Dr. Abbott. (See page 55.)

HOSPITAL JOURNAL CLUB.

Meeting of February 10th, 1889.

Ophthalmology.—Dr. Randolph.

Ueber die Färbung der Erkrankten Hornhaut mit Fluorescein und dir Verwerthung dieser Färbung bei Stellung von Diagnosen und Differentiadiagnosen. *von Dr. Thomalla* in Friedland.
(*Cent. f. prakt. Augenheilkunde*, Nov. u. Dec., '87.)

Meeting of February 24th, 1890.

General Medicine.—Dr. Lafleur.

La grippe, Histoire des anciennes épidémies, La pneumonie grippale, par *M. Jaccoud.*
(*Gaz. des hôpitaux*, Feb. 4, '90.)

Traitement de la dysenterie par injections de sublimé corrosif, par *Dr. G. Lemoine.*
(*Bulletin général de thérapeutique*, Jan. 30, '90.)

The diagnostic value of salol in motor insufficiency of the stomach. *J. Decker.*
(*Berliner Klin. Woch.*, '89, p. 975.)

Conditions determining the presence of sugar in the urine. *W. M. Ord.*
(*Brit. Med. Jour.*, Nov. 2, '89.)

General Medicine.—Prof. Osler.

Des Hématozoaires du paludisme, par *M. Laveran.*
(*Arch. de Med. Exp.*, Jan., '90.)

Sulla Febbri Malariche. *Celli and Marchiafava.*
(*Atti della R. Acad. Med. di Roma.*, Vol. II, Series 2.)

Hygiene.—Dr. Abbott.

Ein Blutbefund bei Influenza. *Klebs.*
(*Cent. f. Bact. u. Parisitenkunde*, Bd. VII, No. 5.)

Die physikalische Einwirkung von Sinkstoffen auf die im Wasser befindlichen Mikro-organismen. *Krüger.*
(*Zeit. f. Hygiene*, Bd. VII, Heft 1.)

Ueber die Bestimmung des antiseptischen Werthes chemischer Präparate mit besonderer Berücksichtigung einiger Quecksilbersalze. *Behring.*
(*Deutsche Med. Woch.*, '89, Nos. 41–43.)

Meeting of March 10th, 1890.

Surgery.—Dr. Brockway.

Experiments on anæsthetics at Hyderabad. *Lauder Brunton.*
(*Brit. Med. Jour.*, Feb. 12, '90.)

Abstract of same.
(*Am. Jour. of Med. Sciences*, March, '90.)
Cause of death from chloroform. *Wood and Hare.*
(*Med. News*, Feb. 22, '90.)
Does ether anæsthesia injuriously affect the kidneys? *Weir.*
(*N. Y. Med. Jour.*, March 1, '90.)
Laparotomy for recurrent appendicitis. *Weir.*
(*Med. News*, March 1, '90.)
Resection and arthrectomy of ankle and knee joints. *Ollier, Müller, Sendler, Plum,* and *Serr.*
(*Centralbl. f. Chir.*, Nos. 7 and 8, 1890.)

Gynæcology.—DR. ROBB.

Duration of pregnancy. *Dr. A. R. Graham.*
(*St. Bartholomew's Hosp. Reports.*)
Duration of pregnancy. *Olshausen.*
(*Trans. of Berlin Obstet. and Gyn. Soc.*, '88.)
238 cases of completed ovariotomy. *Bantock.*
(*Trans. Br. Gyn. Soc.*, Nov., '89.)
The results of nephrorrhaphy. *Frank.*
(*Berliner Klinische Wochenschrift*, '89, Nos. 9–11.)
The importance of early extirpation of the uterus for the cure of cancer of the cervix. *Meyer.*
(*Correspondenzblatt für Schweizer Aertze*, '89, No. 4.)
Visceral disease as a complication of cancer of the uterus. *Leca.*
(*Thèse de Paris*, '88.)
The choice of methods in the treatment of uterine cancer. *Reeves Jackson.*
(*Phila. Medical News*, Jan. 18, '90.)
A digest of twenty years' experience in the treatment of uterine cancer by galvano-cautery. *Bryne.*
(*Trans. Amer. Gyn. Soc.*, Vol. XIV, '89.)
The results of total extirpation of the uterus. *Kaltenbach.*
(*Berliner Klinische Wochenschrift*, '89, Nos. 18 and 19.)
Intestinal obstruction following the removal of a cyst of the mesentery. *Löhlein.*
(*Berliner Klinische Wochenschrift*, '89, No. 5.)

Meeting of March 24th, 1890.

Otology.—DR. RANDOLPH.

A case of traumatic injury to the labyrinth of right ear successfully treated by injections of pilocarpin. *E. J. E. Kirk, M. R. C. S.*
(*Brit. Med. Journal*, Feb. 1, '90.)
The ear in criminals. *H. Ellis, L. S. A.*
(*Lancet*, Jan. 25, '90.)
Ueber Erkrankungen des Ohres bei Diabstikern. *Prof. Dr. Kuhn.*
(*Arch. f. Ohrenheilkunde*, Bd. XXIX, 1.)

Meeting of April 14th, 1890.

General Medicine.—DR. SCOTT.

The constitution of the red blood-corpuscles.
(*Reference in N. Y. Med. Journal*, April 12, '90.)
Tetanus inoculations in domestic animals. *Prof. Kitt*, Munich.
(*Translation in N. O. Med. and Surg. Journal*, April, '90.)
Notice of Hospital Reports.
(*British Med. Journal*, April, '90.

General Medicine.—DR. TOULMIN.

Hypodermic injections of carbolic acid in erysipelas. *Dr. P. Sampter.*
(*Bul. gen. de Therapeutique*, Jan. 15, '90.)

Hygiene.—DR. ABBOTT.

Studien über den Typhusbacillus, von *Walter Cygnaeus.*
(*Ziegler's Beiträge*, Band VII, Heft 3.)

General Medicine.—DR. LAFLEUR.

Contribution à l'étude des pleurésies métapneumoniques et plus particulièrement de leur variété sero-fibrineuse, par *M. Cl. Chesseret.*
Des lésions costales liées à la pleurésie purulente chez l'enfant, par *M. D. Bauby.*
Contribution à l'étude de la pleurésie interlobulaire suppurée, par *M. G. Pailhas.*
(*Gaz. Med. de Paris*, April 12, '90.)

General Medicine.—DR. ROBB.

Diseased cravings and paralyzed control. Morphinomania, chloralism, &c. *T. S. Clouston, M. D.*
(*Edinburg Med. Journal*, March, '90.)

Hygiene and Bacteriology.—DR. ABBOTT.

Ueber die Parisiten der Malaria, von *Grassi und Feletti.*
(*Cent. f. Bact. u. Parisitenkunde*, '90, Nos. 13 and 14.
Sur un cas de bronchopneumonie érysipélateuse sans érysipèle externe. par *Mosny.*
(*La Semaine Med.*, '90, No. 7.)

Bacteridies charbonneuses asporagène, par *M. E. Roux.*
(*Annales de l'institut Pasteur*, No. 1, '90.)
Experimentelle Untersuchung über den Einfluss der Verdünnung auf dir Wirksamkeit des tuberkulösen Giftes, von *F. Gebhardt.*
(*Virchow's Arch.*, Bd. 119, p. 127.)
Ueber die Pilzsymbiose der Leguminosen, von *Frank.*
(*Ber. der deutschen botanischen Ges.*, '89, p. 332.)
Ueber die Einwirkung des Menschlichen Magensaftes auf Krankheitserregende Keime, von *Kurloff und Wagner.*
(*Wratsch*, '89, Nos. 42 and 43.)

TYPHOID FEVER ORGANISMS AND LOWER ANIMALS.

The paper by Cygnaeus, which recently appeared in Ziegler's Beiträge, appears to settle the question as to the infectious nature of the bacillus of typhoid fever for certain of the lower animals.

Hitherto, opinion has been divided upon this subject and, perhaps we might say, the weight of evidence favored rather the toxic than the true infective action of the organisms in the bodies of the animals operated upon.

Sirotinin, Beumer, Piper and others claim that the changes and symptoms which appear in the animals inoculated are the result of a true toxic action due to the presence of Brieger's typho-toxine, whereas Fraenkel and Simonds, A. Fraenkel, Seitz and others found pathological changes in the animals experimented upon by them, which, in general, were so analogous to those found in the human subject affected by the disease as to justify them in concluding that a true infection had taken place.

That a true infection, and not a toxic effect, may be present, a multiplication of the organisms in the body must occur, and this Cygnaeus has demonstrated. He finds that dogs and rabbits, in the circulation of which pure cultures of typhoid organisms had been injected, showed a rise of temperature, looseness of the bowels and death after about three days.

At autopsy, the spleen was found to be enlarged, the mesenteric glands swollen, Peyer's patches congested, and here and there necrotic areas in the ileum.

On microscopic examination of liver, spleen and mesenteric glands the organisms were found to be present in their characteristic groups.

The finding of these groups of organisms in the spleen and liver is the deciding point, for this alone may be considered as proof-positive that there was an increase in the number of organisms in the body after inoculation, and that death had not resulted from the *toxic* action of the cultures employed.

In confirmation of the experiments of Cygnaeus I wish to call attention to my own work in this direction. Though it was done during the Summer of 1886, still I wish it to be distinctly understood that I claim no precedence for it over the work of Cygnaeus, which is in extent and completeness much in advance of the few experiments made at that time by me. In one of these experiments the results corresponded in every respect with those published by Cygnaeus—the experiment runs as follows:

July 23d, 1886, 11.30 A. M. One and a half cubic centimetres of a watery suspension of the bacillus of typhoid fever were injected through the ear vein into the circulation of a rabbit. The animal was found dead July 26th, at 9 A. M.

Externally, the animal showed no evidence of having had diarrhœa. Upon opening the abdomen the intestines were seen to be filled with yellowish, semi-fluid material. At the extremity of one Peyer's patch a small area of necrosis was found—three similar spots were noticed in the neighborhood of the ileo-cœcal valve and one in the vermiform appendix. One enlarged mesenteric gland was present. The kidneys were spotted with minute capsular hemorrhages. The spleen was not markedly enlarged. Throughout the small intestine there was a tendency to redness and enlargement of the solitary follicles.

Microscopic examination of the spleen revealed the presence of the typhoid organisms grouped in the characteristic manner. Cultures from this organ gave pure colonies of a bacillus which grew on potatoes after the fashion described for the typhoid organism. Longitudinal sections through the necrotic areas in the intestines showed the presence of minute hemorrhages into the submucosa and muscular coats. Many bacilli were also to be seen, but only at one point could a group characteristic of the typhoid organisms be made out.

I cite the experiment, as has been said, only in confirmation of the interesting results obtained by Cygnaeus and not with the idea of priority.

A. C. ABBOTT.

WEIR MITCHELL.*

Mr. Chairman and Fellows:

Never has a more pleasing duty devolved upon me than the reception on behalf of the college of this portrait of our distinguished ex-president.

Even in counterfeit presentment, to join the noble group which graces this hall is one of the greatest honors which can be conferred upon a member of our profession. And in thus honoring we are ourselves honored; for rarely in our annals do we find a name writ so broad and so large as that of Weir Mitchell. A worker in the science of physiology, with an ardor which waxes, not wanes, with growing winters; a practical physician, of unrivalled skill in dealing with obscure and troublesome affections, he is a notable modern representative of those great men of the past who, from Harvey to Hunter, illumined the dark pathways of practice with the lamp of science. And in a hard age of narrow specialism this lesson of his life is, perhaps, best worth reading.

But this is not all. In yet another and a more difficult department has our esteemed Fellow won distinction for himself and for us. Not in vain, has he wandered amid green pastures and by the still waters in the Garden of the Gods, and the Pierian roses which he has gathered have the bloom and much of the fragrance of those which deck the brows of our brother craftsmen—of Goldsmith, of Keats and of Holmes.

Heredity has done much, environment has done more, in the career of which I speak. Unlike the majority of those who have "passed the chair" of this honorable Faculty, the path along which Weir Mitchell trod to fame led around, not through, academic halls. When university positions are so coveted, and when the ambition of every worker is to teach, it is a satisfaction to be able to point to a man who has risen from the ranks, so to speak, to the highest generalship and command. But may I allude—if only to show the truth of Schiller's dictum,

> "Des Lebens ungemischte Freude
> Ward Keinem Irdischen zu Theil,"

to disappointed academic ambitions on the part of our distinguished Fellow, now long past, perhaps even forgotten by him. Truly the stone which the builders rejected has become the chief stone of the corner. For his sake I have always thought that in so doing they "builded better than they knew."

Again; in relation to this college, around which clusters so large a part of all that is best in the history of the profession of this city, the man whom we now delight to honor has fostered its growth, widened its influence, and stimulated its life. For this we thank him best when we place his portrait in line with those of Redman, Shippen and Wood.

Is it too weird a speculation to think that here, to-night, in this hall, amid the volumes of forgotten lore, a ghostly procession of our presidents who have gone will pass verdict on this picture and will greet as worthy one who, *caute, caste et probe*, supported the traditions which they held so dear?

Amid the racket and hurly-burly few of us have the chance to warm both hands at the fire of life. No member of the profession in his generation, either in America or in Europe, has so pleasantly toasted hands and feet before the logs as S. Weir Mitchell; and no one has been more ready to give a brother a place at the glowing hearth. If asked for a scroll to place beneath that frame I would write that he was one

> "Whose even-balanced soul
> Business could not make dull, nor passion wild;
> Who saw life steadily, and saw it whole."

*Remarks by Professor Osler on the occasion of the presentation to the College of Physicians, Philadelphia, of the portrait of Dr. S. Weir Mitchell, April 22, 1890.

PUBLICATIONS OF THE JOHNS HOPKINS HOSPITAL.

I.—Hospital Plans.

Five essays relating to the construction, organization and management of Hospitals, contributed by their authors for the use of the Johns Hopkins Hospital of Baltimore. These essays were written by Drs. John S. Billings of the U. S. Army, Norton Folsom of Boston, Joseph Jones of New Orleans, Caspar Morris of Philadelphia, and Stephen Smith of New York. They were originally published in 1875. One volume, bound in cloth, price $5.00.

II.—Description of the Johns Hopkins Hospital.

A description of the Johns Hopkins Hospital, by John S. Billings, M. D., LL. D., Medical Adviser to the President and Building Committee of Board of Trustees. It will contain numerous plates with plans and detail drawings of all the Hospital buildings; also photographic views of the exterior of the buildings. It will contain a careful and detailed description of the methods of heating and ventilating, plumbing and water-supply; also of the arrangements of the wards and service buildings and the mode of construction of the Hospital. The volume will be ready in June.

III.—The Johns Hopkins Hospital Reports.

Volume I, for 1889. (In preparation). This volume will contain the Studies from the Pathological Laboratory.

There will appear articles on the following subjects: hemorrhagic infarction, repair of intestinal suture, reversal of the intestine, extirpation of the thyroid gland in dogs, the effects of artificial heat upon animals, hog cholera, behavior of bacteria in water, bulbar paralysis, cerebellar sclerosis.

The volume will be provided with illustrations.

It will be edited by Dr. W. H. Welch, Professor of Pathology and Pathologist to the Hospital.

Volume II, for 1890. The second volume of the Hospital Reports began in January, 1890. They will contain pathological, medical, surgical and gynæcological papers and reports, details of cases, the technique of operations, etc. Subscriptions will be received for the volume, of about 500 pages, at $5. The price of the separate fasciculi will vary with their size and the number of plates they contain. Nos. 1 and 2 [for 1890] of the *Reports* are now ready. No. 3 is in press.

IV.—The Johns Hopkins Hospital Bulletin.

The Hospital Bulletin will contain announcements of courses of lectures, programmes of clinical and pathological study, details of hospital and dispensary practice, abstracts of papers read and other proceedings of the Medical Society of the Hospital, reports of lectures and other matters of general interest in connection with the work of the Hospital. Nine numbers will be issued annually. The first number appeared in December, 1889. The subscription price is one dollar per year.

A pamphlet containing the addresses of Francis T. King, President of the Hospital, Daniel C. Gilman, President of the University, and John S. Billings, Medical Adviser to the Hospital Trustees, at the opening of the Hospital, May 7, 1889, may be obtained on application.

Subscriptions for the above publications may be sent to the

Publication Agency of the Johns Hopkins University,
Baltimore, Maryland.

CONTENTS.

	PAGE.
On the Amœba Coli in Dysentery and in Dysenteric Liver Abscess. By William Osler,	53
The Relation between Water Supply and Epidemics. By A. C. Abbott,	55
Bacteriological Study of Hail. By A. C. Abbott,	56
The More Remote Results of Removing the Ovaries and Tubes. By H. A. Kelly,	57
Notes on New Books,	58
Proceedings of Societies: Hospital Medical Society:—Pre-Ataxic Tabes Dorsalis with Retained Knee Jerk; Acute Bright's Disease in Cows; Bilateral Dislocation of Jaws; Mechano-Therapy in Sweden and Germany; Milk as a Culture Medium for Tubercle Bacillus; Remarks on Mitchell's High-Tension Pulse; etc.	59–62
Hospital Journal Club,	62
Typhoid Fever Organisms and Lower Animals. By A. C. Abbott,	63
Weir Mitchell. By William Osler,	64

The Johns Hopkins Hospital Bulletins are printed by Messrs. JOHN MURPHY & CO., Baltimore, from whom single copies may be obtained; they may also be procured from Messrs. CUSHING & CO. and the BALTIMORE NEWS COMPANY. Subscriptions, $1.00 a year, may be addressed to the Publication Agency of the Johns Hopkins University, Baltimore; *single copies will be sent by mail for fifteen cents each.*